Claims

1. A method for determining polarisation of an electrode of a VRLA battery, the method including the steps of:
allowing the battery to discharge for a selected period of time,
monitoring the battery voltage during the selected period, and
from the change in voltage over the selected period, determining the polarisation of the electrode.

2. A method as claimed in claim 1 including detecting the magnitude of the change in voltage to determine the polarisation of the electrode.

3. A method as claimed in claim 1 or claim 2 including the step of detecting a first change in battery voltage and a subsequent second change in battery voltage, and associating the first change with polarisation of a negative electrode and the second change with polarisation of a positive electrode.

4. A method as claimed in claim 3 including comparing the polarisation of at least one electrode with an expected polarisation value or range of polarisation values to determine parameters of a float charge to be applied to the battery.

5. A method as claimed in claim 1 wherein the step of discharging comprises open circuit charge leakage.

6. A method as claimed in claim 1 wherein the step of discharging comprises closed circuit enforced discharging.

7. A method as claimed in claim 1 wherein the step of discharging occurs as part of a current perturbation applied to the battery.

8. A method as claimed in claim 7 wherein the polarisation of the negative electrode is determined.

9. A method as claimed in claim 1 further including the step of using the difference between the battery voltage prior to discharge and the polarisation detected to determine the polarisation of the other electrode.

10. A method of providing a float charge to a VRLA battery, the method including the steps of:
allowing the battery to discharge for a selected period of time,
monitoring the battery voltage during the selected period, and
applying a float charge to the battery dependent on the change in battery voltage over the selected period.

11. A method as claimed in claim 10 wherein the step of discharging comprises open circuit charge leakage.

12. A method as claimed in claim 10 wherein the step of discharging comprises closed circuit enforced discharging.

13. A method of providing a float charge to a VRLA cell, the method including the steps of:
determining the peak Tafel equivalent resistance for the cell and applying a voltage to the cell electrodes dependent on the determined equivalent resistance.

14. A method of modelling a VRLA cell, the method including the steps of:
simulating a capacitance corresponding to a float region of cell operation of a positive electrode of the cell,
simulating a capacitance corresponding to a float region of cell operation of a negative electrode of the cell.

15. A method as claimed in claim 14 wherein the capacitances are simulated as dual value capacitors, one value corresponding the bulk charge capacity of the cell and the other value corresponding to the float region.

16. A method as claimed in claim 14 including simulating a variable resistance for at least one electrode and varying the resistance to simulate a Tafel characteristic of the electrode.

17. A method of modelling a VRLA cell, the method including simulating a dual value capacitance, one value corresponding to a float region of cell operation and the other value corresponding to a bulk charge storage capacity of the cell.

18. A method as claimed in claim 17 including simulating a dual value capacitance in relation to a positive cell electrode and simulating a dual value capacitance in relation to a negative cell electrode.